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ABSTRACT

To investigate differences in mothers' interaction patterns with their neonate twins based on birth order, relative size at birth, or gender, 37 neonate twins and their mothers were observed during the first 10 minutes of a feeding in a hospital nursery. Time-sampling recordings were made of maternal behaviors related to proximal stimulation, distal stimulation, positive and negative affect expression, and vocal stimulation. Fourteen neonates were bottle-fed and 23 neonates were breastfed; in all instances, the mother fed only one neonate at a time. No differences in interactions were found based on birth order or size within twin pairs. However, significant differences were observed based on neonate gender. Mothers displayed more positive and negative affect toward their male neonates than toward their female neonates. Mothers used positive vocalizations, looked and smiled at, and stroked and held their male neonates more frequently than their female neonates. Mothers were more likely to talk to others in the room when interacting with their female neonates than with their male neonates. Significant differences were found in the patterns of intercorrelations of several maternal behaviors toward their male and female neonates. These behaviors included expressions of positive affect, vocalization, and responsive and rejecting behaviors. (MM)

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Gender Differences in Mother-Neonate Twin Interaction

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ABSTRACT

Observations were made of mothers and 37 neonate twins during a nursery-scheduled feeding. Time-sampling recordings were made of maternal behaviors related to proximal stimulation, distal stimulation, positive affect expression, negative affect expression, and vocal stimulation. There were no differences in mothers interacting with their twins based on birth order or size within twin pair. Significant differences were observed, however, based on neonate gender. Mothers displayed both more positive affect and more negative affect toward their male neonates than toward their female neonates, and more proximal stimulation with male neonates. Gender differences favoring males were observed in frequency of positive vocalizations, looking and smiling at neonate, stroking and facing, and talking to the observer. There were significant differences in the intercorrelation patterns of maternal behaviors by neonate gender relating positive affective behavior, vocalizing, position holding baby, and maternal responsive and rejecting behaviors. The findings may be related to behavioral differences between male and female neonates, and have implications for developmental differences between males and females.

INTRODUCTION

Approximately one out of 80 births in the United States is a twin birth, so that twins represent one out of 40 children. Compared with singletons, twins as a group are at risk for developmental deficits. Part of this risk may be due to the inability of parents to cope with the physical and emotional demands of caring for two infants instead of one. Relatively little research has been done with twins and their parents, and the research that has been conducted has included twins at risk because of prematurity and related medical factors. One study (Allen et al, 1971) suggested that mothers felt more emotionally attached to the twin who was smaller, born second, and had more neurological problems. Spillman (1984) has suggested that mothers prefer the twin who was larger at birth.

Measures of mother-infant interaction pinpoint differences in caregiving and predict later behavioral and developmental difficulties. The purpose of the present study was to determine if there were differences in mothers' interaction patterns with their neonate twins based on birth order, relative size at birth, or gender. Observations were made before hospital discharge so that interactions were not influenced by home/family/environmental variables. Only healthy twins were included so that concerns caused by perinatal medical variables did not affect the outcome measures.

METHOD

Subjects. The sample included 37 neonate twins (23 male, 14 female) and their mothers. Chronological age for the infants at the time of observation ranged from 2 to 7 days, with the exception of one infant who was 10 days old and one infant who was 29 days old (mean = 5 days). There were 20 first-born and 17 second-born twins, and 19 larger and 18 smaller within-pair twins.

Procedure. Observations were made of mothers and their neonates for the first 10 minutes of a nursery-scheduled feeding. The observations took place in the mother's room for 24 neonates, and in the nursery for 13 neonates. In all instances mother fed only one neonate at a time. 14 neonates were bottle-fed, 23 neonates were breast-fed. Time-sampling recordings were made of maternal behaviors similar to those described by other investigators (e.g., Dunn & Richards, 1977; Fleming et al, 1988; Isabella et al, 1989). The schedule consisted of alternating 15-second observation and recording periods, signals for which were provided through an earpiece attached to a portable tape recorder.

Behaviors observed included position held (cradling in flexed arm, on lap with extended arm, on shoulder, supine on lap, prone on lap); if infant is positioned facing the mother; type of handling (adjusts position, pats or rubs, strokes, cuddles/hugs, kisses, soothes, plays, stimulates to suck-jiggles, examines baby, irritates/negative stimulation); vocalizations (talks to baby, vocalizes/coos to baby, sings to baby, talks to others), and visual (looks at baby, smiles at baby, looks at others or away). Positive and negative aspects of the interactions were differentiated. Summary ratings were made of mother's emotional tone/affect, mother's responsiveness, and "smoothness" of interaction. Interrater reliabilities ranged from 88% to 100% agreement.

The data consisted of frequency counts of the specific maternal interactive behaviors which were combined using an *a priori* categorization system similar to that of previous

studies (Feiring et al, 1987; Greene et al, 1983). Maternal behaviors were summed to form five categories as follows: (1) Proximal stimulation: cradles, on shoulder, facing mother, cuddles, rocks; (2) Distal stimulation: on lap with extended arm, supine on lap, prone on lap; (3) Positive affect expression: pats/rubs - positive, strokes - positive, kisses, soothes, talks to baby - positive, coos, smiles at baby; (4) Negative affect expression: pats/rubs - negative, strokes - negative, talks to baby - negative (includes criticism and anger), "force-feeds", irritates/negative stimulation; (5) Vocal stimulation: all vocalizations.

RESULTS

To determine if there were differences in mothers' interacting with their twins by birth order, relative size at birth, or gender, Brown-Forsythe Equality of Means Tests were computed for the a priori categorization scores. There were no differences on any of the scores based on birth order or size within twin pair. Significant differences were observed, however, based on gender. Mothers displayed both more positive affect and more negative affect toward their male neonates than toward their female neonates. There was a trend toward more proximal stimulation with male neonates than with female neonates. The data indicated there were more interactive behaviors with male twins than with female twins. (Table 1).

Examination of the separate scores composing the a priori categorization scores indicated that, during interaction, mothers talked positively more frequently to their male than to their female neonates, looked more and smiled more at their male than at their female neonates, positively stroked and held their male neonates facing them more frequently than their female neonates, and were more likely to talk to others in the room (i.e., the observer) while interacting with their female neonates than with their male neonates (Table 2).

The patterns of interaction with the twins then were examined by computing the intercorrelations for the interactive scores separately for the male and female neonates. Significant differences in the interactive patterns by gender were found when testing for the significance of differences between the two rs: For males, proximal stimulation was related to positive affect expression, whereas for females the correlation was zero. Similarly, for males, proximal stimulation was positively related to vocal stimulation, whereas for females the correlation was not significantly different from zero. Mothers who held their male neonates close to and facing them

were likely to display positive affective behaviors toward those infants and vocalize during their interactions. For both male and female mother-neonate interactions there was a significant negative correlation between proximal stimulation and distal stimulation, and a significant positive correlation between positive affect and vocal stimulation (Table 3).

The intercorrelations among the individual items in the a priori categorization scores then were computed separately for the male and female mother-neonate interactions, and differences between the rs of the two groups were calculated. The results described statistically significant differences in the patterns of interactions between mothers and their neonate male and female twins. These findings indicated gender differences in interaction by the position the baby was held and maternal responsive, rejecting, adjusting, gazing, vocalizing, smiling, and handling behaviors; between stroking and handling; and between cuddling, rocking, and kissing (Table 4).

CONCLUSIONS

It is clear that mothers' interactions with their neonate twins are different for males and females. Previous research demonstrated gender differences in neonatal temperament, where female neonates were more irritable and more difficult to soothe than male neonates. These early differences in temperament may differentially influence maternal interactive behaviors with their neonates. Other variables also may account for these findings; for example, cultural influences may affect mothers' attitudes toward male and female children and, therefore, mothers' interactions with their infants. Gender differentiating maternal interactive behaviors with infants may have implications for developmental differences between males and females. The findings suggest further study of maternal interactions with singleton infants as well as opposite-sex twin pairs.

Table 1

Mean Maternal Interactive Categorization Scores by Neonate Gender

	Male	Female	F	df	Significance
Positive Affect Expression	35.8	17.2	9.21	1,35	.005
Negative Affect Expression	.83	.07	4.24	1,24	.05
Proximal Stimulation	39.4	32.6	3.65	1,34	.07
Distal Stimulation	2.0	3.2	0.50	1,35	NS
Vocal Stimulation	18.1	14.1	1.73	1,32	NS

Table 2

Mean Individual Maternal Interactive Behaviors
by Neonate Gender

	Male	Female	F	df	Significance
Talks to baby - Positive	11.7	6.5	6.27	1,32	.02
Looks at baby	19.8	18.0	7.01	1,14	.02
Smiles at baby	5.7	2.3	4.82	1,34	.04
Strokes baby - Positive	7.2	1.6	18.06	1,35	.0002
Holds baby facing	17.1	13.9	3.13	1,24	.09
Talks to Observer	3.8	7.1	3.18	1,22	.09

Table 3

Intercorrelations for Maternal Interactive Categorization Scores

for Male and Female Neonates Separately

Male

	Dist stim	Pos Affect exp	Neg Affect exp	Vocal stim
Proximal stimulation	-.63**	.73** (a)	-.14	.59** (b)
Distal stimulation		-.37	.03	-.35
Positive affect expression			-.32	.74**
Negative affect expression				-.30
Vocal stimulation				--

Female

	Dist stim	Pos Affect exp	Neg Affect exp	Vocal stim
Proximal stimulation	-.65**	.00 (a)	.30	-.27 (b)
Distal stimulation		.26	-.16	-.15
Positive affect expression			.38	.56*
Negative affect expression				-.08
Vocal stimulation				--

(a) CR = 2.49, $p < .05$ between male and female

(b) CR = 2.57, $p < .05$ between male and female

* $p < .05$, ** $p < .01$

Table 4

Intercorrelations for Individual Maternal Interactive Behaviors
for Male and Female Neonates Separately
(Selected by Statistical Significance)

	Males *r*	Females *r*	Difference Between *r*s CR	Significance
lap extended arm - M responsive	-.60**	.22	2.43	.05
- M rejecting	-.47*	.29	2.16	.05
on shoulder - adjusts position	-.10	.57*	2.00	.05
- mutual regard	.81**	-.30	3.85	.01
supine on lap - talks to baby positive	-.37	.65**	3.07	.01
- talks to baby negative	.90**	.00	3.93	.01
- coos to baby	-.10	.85**	3.63	.01
- smiles to baby	-.20	.72**	2.97	.01
- M looks away	.44*	-.42	2.46	.05
adjusts position - pats baby positive	-.19	.69**	2.78	.01
- talks to baby positive	-.01	.63**	2.00	.05
- smiles at baby	-.45*	.29	2.08	.05
- M rejecting	-.50*	.28	2.24	.05
pats baby positive - examines baby	-.22	.54*	2.19	.05
strokes baby positive - cuddles	-.27	.61*	2.65	.01
- examines baby	-.25	.80**	3.63	.01
cuddles - rocks	.94**	.24	4.01	.01
cuddles - coos to baby	.84**	.05	3.13	.01
rocks - kisses	-.07	.72**	2.62	.01
- coos to baby	.88**	.11	3.39	.01
jiggles - talks to observer	.52**	-.38	2.57	.05
- M responsive	-.43*	.33	2.14	.05

* $p < .05$, ** $p < .01$

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